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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/186,388	11/05/98	LEE B	CS97-110/112

EXAMINER	
PERALTA, G	
ART UNIT	**PAPER NUMBER**
2814	17

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DATE MAILED: 11/07/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/186,388	LEE ET AL.	
	Examiner	Art Unit	
	Ginette Peralta	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *15* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Current (U.S. Pat. 5,155,369) in view of Aitken (U.S. Pat. 4,578,589), as previously applied.

Current teaches a method of forming source/drain regions, comprising the steps of providing a semiconductor integrated circuit wafer having a gate electrode and source/drain regions, providing an ion implant apparatus which is the Precision Implant 9200 from Applied Materials, adjusting the ion implant apparatus so that the ion implant apparatus produces an ion beam comprising P_2^+ or As_2^+ ions, wherein the ion beam has a beam density and a beam energy, implanting P_2^+ or As_2^+ ions into the gate electrode and the source/drain regions of the integrated circuit wafer in a single step using the ion implant beam, and annealing the integrated circuit wafer having the P_2^+ or As_2^+ ions implanted at an anneal temperature for an anneal time; wherein the adjusting the ion implant apparatus so that the ion implant apparatus produces an ion beam comprising one of P_2^+ or As_2^+ ions using a magnetic analyzer; wherein the beam

density is between about 10^{14} and 10^{15} ions/cm^2 and the beam energy is 20 or 50 KeV; the anneal temperature is between about 900 and 1100°C; the anneal time is between 1 and 30 seconds.

Current teaches all the limitations in the claims with the exception of placing a phosphorus or arsenic ion source in the ion implant apparatus, wherein the phosphorus ion source and the arsenic ion source comprises solid phosphorus and solid arsenic, respectively.

Aitken teaches an apparatus for ion implantation such as the one used in Current that comprises a solid arsenic and a solid phosphorus ion sources, and placing the ion source in the ion implant apparatus.

Thus, it would have been obvious to one of ordinary skill in the art to use a solid arsenic ion source or a solid phosphorus ion source in the ion implant apparatus as taught by Aitken in the invention of Current, as it is shows that it is well known and desirable in the art to the possibility of using a solid ion source in the apparatus used by Current in his invention and to vary the ranges for the beam density, beam energy, and anneal time as the values taught in Current encompass those of the claims, and it would not yield any unexpected results.

Response to Arguments

1. Applicant's arguments filed 8/23/01 have been fully considered but they are not persuasive.

With respect to Applicant's argument that Aitken in view of Current do not disclose a single ion implantation step, it is noted that in Col. 8, at the top, Current teaches a single implantation step of P_2^+ or As_2^+, followed by an implantation of another species, the claims comprise an ion implantation of one of two species but the scope of the claim does not preclude a multi-step implantation of the species, therefore it would have been within the scope of one of ordinary skill in the art to implant the P_2^+ or As_2^+ in one followed by an implantation of another species as long as the integrity of the device is preserved, it is also noted that the two step implantation of Current is not incident in the same region, the first implantation is performed at an angle such that channeling effect is minimized when the actual source/drain region implantation is performed.

Furthermore, the claim language still does not preclude the introduction of additional species as the claim language relates to a process comprising the steps and not exclusively consisting of the steps recited in the claims.

With respect to applicant's argument that the actual source drain implantations of Current uses P^- or As^- ions, it is noted that the first implantation, in which one of P_2^+ or As_2^+ is used, regions 64 and 65 that correspond to source and drain regions are formed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ginette Peralta whose telephone number is (703)305-7722. The examiner can normally be reached on Monday to Friday 8:00 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703)306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

GP
November 2, 2001

OLIK CHAUDHURI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800